COMPAQ

Software Product Description

PRODUCT NAME: Compaq DATATRIEVE Version 7.2A for OpenVMS VAX Systems SPD 24.44.32

DESCRIPTION

Compaq™DATATRIEVE ™ for OpenVMS™ VAX™ systems is a query, report, and data management tool for the OpenVMS Operating System. It provides a uniform access method for data stored by RMS™, Oracle Rdb™, and Oracle CODASYL DBMS™ files on OpenVMS and data residing in other databases accessible by the Oracle Rdb Transparent Gateway™ products. Using DATATRIEVE, a novice or experienced user can retrieve or modify data without considering the underlying storage method or physical location.

Modes of Operation

DATATRIEVE presents information in several different formats. Information can be displayed using simple defaults or can be reported on through a more flexible report writer. Information can be displayed on a terminal or workstation, printed on a hard-copy device, or written to a file. Information can also be presented graphically with user-defined VAX FMS™ and VAX TDMS™ forms, as well as with DECforms™. Graphics output is ReGIS™; it can be managed by devices or converters accepting ReGIS. DATATRIEVE also provides an efficient way to access information stored on other VAX, Alpha or PDP™-11 systems linked by DECnet™.

DATATRIEVE can be used interactively to retrieve, modify, store, or delete data using a simple set of commands. Frequently used combinations of commands can be stored as named procedures and invoked by name. Programs written in other Compaq languages can call DATATRIEVE, allowing them to be independent of underlying data storage methods and physical location.

A Compaq DECwindows™ Motif® interface to DATATRIEVE is provided. This allows the user to perform a subset of the DATATRIEVE functions using menu bars, scroll bars, pop-up menus, pull-down menus, and buttons. The user can also use a navigator to browse through the dictionary directories, select objects, and execute commands on them directly from pop-up menus.

Data Dictionary

DATATRIEVE is dictionary driven. DATATRIEVE has removed the dependencies from Oracle CDD/Repository by supporting a new textfile dictionary in addition to Oracle CDD/Repository. DATATRIEVE provides the following two independent dictionary alternatives:

- Data Dictionary using Oracle CDD/Repository for OpenVMS.
- DATATRIEVE textfile-based dictionary.

Data Dictionary using Oracle CDD/Repository for OpenVMS

Using this dictionary, data descriptions are stored in and retrieved from Oracle CDD/Repository for OpenVMS. DATATRIEVE includes commands to store, examine, modify, and delete definitions in the dictionary and can use definitions stored by other layered products, such as the Oracle CODASYL DBMS schema definitions or the Oracle Rdb for OpenVMS database definitions. DATATRIEVE requires the Oracle/CDD Repository in order to manage the Oracle CODASYL DBMS databases.

DATATRIEVE fully supports CDO format dictionaries, including the ability to access shareable fields. Pieces

tracking is also supported for these entities. DATATRIEVE includes full support for DMU format dictionaries as well.

Textfile-based Dictionary

If Oracle CDD/Repository is present on the system, you can select, at installation time, whether to link DATATRIEVE with Oracle CDD/Repository or not. When Oracle CDD/Repository is linked to DATATRIEVE, its use can dynamically be disabled and enabled at run-time by using the SET CDD and SET NO CDD commands. When Oracle CDD/Repository is not linked to DATATRIEVE, the alternative textfile dictionary is enabled.

The new textfile dictionary stores the DATATRIEVE object definitions as text in text files.

Oracle CDD/Repository object definitions can be extracted and redefined as files in the new dictionary system. Text file definitions cannot be shared with compilers and database systems, but can be accessed and manipulated by applications and OpenVMS utilities.

Temporary Definition of Objects

DATATRIEVE extends the use of the DECLARE command to define DATATRIEVE objects. Such objects are temporary (time scope is within a DATATRIEVE session) and do not depend on any dictionary system, as they are stored in memory.

Protection

- Protection with Oracle CDD/Repository

  When DATATRIEVE accesses data through data definitions stored by Oracle CDD/Repository for OpenVMS, protection provided by Oracle

  CDD/Repository applies. An Access Control List associated with an object definition specifies which types of access are granted to the definition itself, and to the defined data. Standard OpenVMS Access Elements can be used based on usernames, UICs, and identifiers. Access rights for terminals can be specified also.

- Protection with the DATATRIEVE resident dictionary using text files

  Text file definitions are subject to the OpenVMS ACL protections, and must be defined and managed by the programmer, using the appropriate DATATRIEVE or OpenVMS commands.

- Protection with in-memory temporary object definitions

  In-memory temporary object definitions do not use any protection mechanisms, and bypass those definitions defined by either Oracle CDD/Repository or the textfile dictionary.

Remote Data Access

DATATRIEVE provides access to data on remote systems in two ways as follows:

- Takes advantage of the remote data access functionality transparently provided by the individual data base management systems (for example, RMS remote files, Oracle Rdb remote databases) according to their rules.
- Requests a DATATRIEVE server to start on the remote system (OpenVMS Alpha and VAX systems or PDP-11) to manage the data definitions and process data remotely. Most operations are performed on the server node and only selected data is exchanged between the requester and the server systems. To work in this way, a DATATRIEVE (Version 7.2A system must be installed on the server node.

For the Nonprogrammer

DATATRIEVE provides the novice user with a tutorial mode called GUIDE Mode.

DATATRIEVE offers ADT (Application Design Tool) for the more experienced user who wants to define data structures. ADT takes the user step-by-step through the definition of a domain based on an RMS data file.

If DATATRIEVE is used on the same information by experienced and novice users, the novice user can use the full power of the language by invoking procedures designed by the more experienced user.

For the Programmer

DATATRIEVE is a highly structured language that provides automatic access optimization, data type conversion, and data validation. Looping and control structures, such as IF THEN ELSE, BEGIN END, REPEAT, WHILE, CHOICE and FOR (each record) can be combined and nested to create complex, powerful procedures.

DATATRIEVE responds to programming errors with clear, explicit error messages. The user can issue an EDIT command to invoke a text editor with an erroneous statement as input text, correct the mistake, and resubmit the command. This editor can be either EDT, TPU, or DEC Language-Sensitive Editor (LSE) and is controlled by a user logical name assignment.

Data Definition

DATATRIEVE stores the fixed attributes of each record in the record definition. In addition to COBOL-like attributes, DATATRIEVE allows validation criteria, fields whose values are computed at run-time, missing value expressions, and default values.

DATATRIEVE supports most data types used by Compaq Fortran™, COBOL, VAX PL/I, Compaq C, and Compaq BASIC™. DATATRIEVE also supports Varying String and Segmented String data types in Oracle Rdb for OpenVMS databases.

Views

A VIEW is an alternative description of data. It can be used to allow a user access to a subset of the data items in a record. It can restrict a user by including only some of the data items in a record, or it can combine data items from several files. Information can be linked through common values (or set linkages in Oracle CODASYL DBMS) to produce complex hierarchical structures. Using a predefined VIEW, a user can access and display data from several files at once with the same commands used on a single file. Data accessed through a VIEW can be printed and modified, but data cannot be stored or erased using a VIEW.

Call Interface

DATATRIEVE provides a client/server API. The DATATRIEVE Client libraries for OpenVMS and Windows™ systems are supplied with the kit of the DATATRIEVE product for OpenVMS systems, and can be copied freely to Client systems.

DATATRIEVE can be accessed from the following programs:

- Programs linked with DATATRIEVE, residing on the same node and process space where DATATRIEVE resides, and written in high-level languages such as Compaq Fortran, Compaq C, COBOL, Compaq BASIC, Compaq Pascal™, and VAX PL/I.
- Programs linked with a DATATRIEVE client library, residing on different nodes or platforms, and written in Visual C++®, Visual Basic® or OpenVMS program languages.

DATATRIEVE automatically converts data from its storage format to the format expected by the program.

DATATRIEVE Client for Windows™

The DATATRIEVE Client/Server architecture allows existing DATATRIEVE users to downsize and distribute their applications and interactive DATATRIEVE operations.

The DATATRIEVE Client for Windows, previously a separately orderable package, is now included with the server software.

The DATATRIEVE Client for Windows offers a graphical user interface that permits users to:

- Browse through the dictionary from a Windows desktop.
- Access, modify, and execute their existing DATATRIEVE procedures and dictionary objects.
- Access the DATATRIEVE language for interactive queries using a query editor.
- Operate on data: display, modify, and store.
- Interoperate (data import/export) with other PC applications.

DATATRIEVE Client for Windows contains the following features, that permit users to:

- Use a query-by-example mechanism in the Query Editor. A query can be specified by providing constraints on field values and simple links between fields, without using the graphical query editor.
- Define DATATRIEVE objects using specific dialog boxes that guide the creation of the objects themselves.
- Use plots. DATATRIEVE Client for Windows PLOT statements produce graphic results in the client environment.
- Use Client/Server TCP/IP transport in addition to DECnet.

Storage Methods

DATATRIEVE uses a single, consistent syntax to provide full access to information stored in RMS for OpenVMS sequential or indexed files (RMS relative files are supported for queries only), Oracle CODASYL DBMS, and Oracle Rdb databases. DATATRIEVE can also provide access to information stored in certain IBM® mainframe databases through the use of Oracle Rdb Transparent Gateway for DB2™, as well as information stored in ORACLE® databases through Oracle Rdb Transparent Gateway for Oracle7 & 8, and SYBASE® databases through Oracle Rdb Transparent Gateway for SYBASE. Data from all these sources can be combined into a single VIEW.

If access to a Oracle CODASYL DBMS database involves explicit set walking or if records must be manually connected or disconnected from sets, the user can employ DATATRIEVE language features that are specific to Oracle CODASYL DBMS access. However, if the user employs VIEWS or implicit set walking, DATATRIEVE can access information in Oracle CODASYL

DBMS databases using the same syntax used for data from an RMS file or Oracle Rdb.

Report Generation

The DATATRIEVE REPORT statement can produce simple formatted reports without formatting statements. It also allows the user to override the default format when more complex reports are required. Reports can either be page-based, printable documents, or table-based formatted data that can be input by a spreadsheet.

Column headers and, in page-based reports, page headers containing title, date, and page numbers are produced automatically. Simple statements (AT TOP, AT BOTTOM) create page headers and trailers for control breaks, page breaks or a report summary. DATATRIEVE provides all of its statistical functions and value expressions within the REPORT statement.

Reports can be output in a variety of output formats: table reports are produced in DTIF format, page-based reports are produced in DDIF, PostScript® and Text formats, and online reports are produced in HTML format.

DATATRIEVE Version 7.2A features a HTML report format that enables you to generate a HTML file suitable for loading into a standard Web browser. HTML is a markup language used to create hypertext documents that are portable across platforms.

Usage of DDIF and PostScript allows a variety of text attributes (size, font types, rendition) to be applied to any part of the report to obtain a boardroom-quality output. These attributes, and other printing characteristics such as page size and orientation, can be selected from DATATRIEVE through simple statements without requiring the use of a graphical terminal. Simple character-cell based reports are also available, using the Text format. Using the CDA™ converter library, DTIF and DDIF reports can be converted to a variety of output formats, allowing interoperability with a number of popular applications.

The CDA Postscript converter is supplied as part of DATATRIEVE Version 7.2A. This packaging eliminates the requirement for a separate installation of CDA software or Motif. You can create PostScript reports using the DATATRIEVE Report Statement.

The Report Writer provides two layout tools: a grid printout of the CDA report layout with placement of rows and columns, including those with varying font types, and graphical printout of the layout page, with placement of the different report objects (such as header, footer, body).

Reports can be generated from data stored in RMS files, Oracle CODASYL DBMS and Oracle Rdb databases. Reports can also be generated from other databases accessed through the use of the appropriate Oracle Rdb Transparent Gateway or DATATRIEVE VIEWS that combine any of these databases without any change in the syntax of the REPORT statement.

Graphics

DATATRIEVE includes a number of predefined plots invoked with a single command that takes standard record selection expressions as arguments and creates bar, pie, line, and scattered point plots of the information selected. Plots can be displayed on Compaq Computer Corporation Graphics terminals such as the VT340 (refer to the OPTIONAL HARDWARE section for a list of specific supported terminals). Hard copy can be obtained from terminals by attaching a Compaq device which supports the SIXEL protocol (for example, LA50, LA75). For users with DECwindows, graphics can be displayed in DECterm windows.

The DATATRIEVE Client for Windows can display, process, modify, print plots created by the plot statement, and export the plot using the clipboard to other applications. Printing to postscript printers is also supported.

Compatibility

DATATRIEVE for OpenVMS VAX systems and DATATRIEVE for OpenVMS Alpha systems are highly compatible, with the exception of the support for floating point definitions, typical of the Alpha platform.

DATATRIEVE is largely upward compatible from DATATRIEVE-11. DATATRIEVE-11 provides a utility that extracts the contents of a DATATRIEVE-11 dictionary in a format to be entered into Oracle CDD/Repository for OpenVMS. Some syntactic and semantic differences do exist between DATATRIEVE-11 and DATATRIEVE. Procedures copied with the EXTRACT utility can require modification.

A user on a DATATRIEVE Version 7.2A can only ready a domain on a remote node when DATATRIEVE Version 7.2A is also installed on that node also. This requirement is new to DATATRIEVE Version 7.2A.

SOURCE CODE INFORMATION

The following source code modules are provided with binary, single-use license options on all magnetic distribution media:

- Function definitions
- Text definitions
- Macro library for function and text definitions

- Message text
- Sample callable DATATRIEVE programs in Fortran, C, BASIC, and Visual BASIC
- DATATRIEVE dictionary object definitions:
  - — Plots
  - — Domains
  - — Records
  - — Procedures
  - — Tables
- Language INCLUDE files for the DATATRIEVE Access Block (used by Callable DATATRIEVE)
- Language INCLUDE files for literal values, external symbols and routine entry point definitions
- Language TEMPLATE file for use with DEC Language-Sensitive Editor (LSE)

This source code is provided on an "as is" basis without any warranty of any kind, either express or implied.

HARDWARE REQUIREMENTS

DATATRIEVE Version 7.2A for OpenVMS VAX is supported on all VAX hardware configurations referenced in the OpenVMS Operating System for Alpha and VAX, Version 7.2, Software Product Description (SPD 25.01.xx).

Processor Restrictions:

A TK50 Tape Drive is required for standalone MicroVAX 2000 and VAXstation 2000 systems.

Other Hardware Required:

Mass storage with a minimum of 25,000 disk blocks for DATATRIEVE system software for VAX Systems.

Disk Space Requirements (Block Cluster Size = 1)

Disk space required for installation:	29,000 blocks (14.5 Mbytes)
Disk space required for use (permanent):	26,000 blocks (13 Mbytes)

These counts refer to the disk space required on the system disk. The sizes are approximate; actual sizes may vary depending on the user's system environment, configuration, and software options.

Memory Requirements for DECwindows Support

The minimum supported memory for this application running in a standalone DECwindows environment with both the client and server executing on that same system is 8M bytes.

The performance and memory usage of DECwindows applications are particularly sensitive to system configuration. Less memory may be required on the client system (the system where the software is installed and executed) if the server (the component that displays the application) resides on another system. More memory may be required on a system with several applications running, or where it may be desirable to improve the performance of an application.

OPTIONAL HARDWARE

Graphics can be displayed on VT125, VT240, VT241, VT330, and VT340 terminals only. For users with DECwindows, graphics can be displayed in DECterm windows.

CLUSTER ENVIRONMENT

This layered product is fully supported when installed on any valid and licensed VAXcluster™* configuration without restrictions. The *HARDWARE REQUIREMENTS* section of this product's Software Product Description details any special hardware required by this product.

* V5.x VAXcluster configurations are fully described in the VAXcluster Software Product Description (29.78.xx) and include CI, Ethernet, and Mixed Interconnect configurations.

SOFTWARE REQUIREMENTS

For Systems Using Terminals (No DECwindows Interface):

- OpenVMS VAX Operating System Version 5.5-2, 6.2, 7.1 or higher. For Fullname support OpenVMS VAX Version 6.2 is required.

For Workstations Running DECwindows Motif:

- OpenVMS VAX Operating System Version 5.5-2, 6.2, 7.1 or higher. For Fullname support OpenVMS VAX Version 6.2 is required.
- DECwindows Motif for OpenVMS VAX V1.2.

This product may run in either of the following ways:

- Stand-alone execution — running the X11 display server and the client application on the same machine.

- Remote execution — running the X11 display server and the client application on different machines.

OpenVMS DECwindows is part of the OpenVMS VAX Operating System but must be installed separately. Installation of OpenVMS DECwindows gives users the option to install any or all of the following three components:

- OpenVMS DECwindows Compute Server (Base kit; includes run-time support)
- OpenVMS DECwindows Device Support
- OpenVMS DECwindows Programming Support

For stand-alone execution, the following DECwindows component must be installed on the machine:

- OpenVMS DECwindows Compute Server

For remote execution, the following DECwindows component must be installed on the machine:

Server Machine

- OpenVMS DECwindows Compute Server (Base kit; includes run-time support)

Client Machine

- OpenVMS DECwindows Compute Server (Base kit; includes run-time support)

OpenVMS Tailoring

The following OpenVMS classes are required for full functionality of this layered product:

- OpenVMS Required Saveset
- Network Support
- Programming Support
- System Programming Support
- Utilities

For more information on OpenVMS classes and tailoring, refer to the OpenVMS Operating System Software Product Description (SPD 25.01.xx).

OPTIONAL SOFTWARE

- DECwindows Motif V1.2 or higher
- Oracle CDD/Repository for OpenVMS Version 6.1 or higher
- Oracle CODASYL DBMS V6.1 or higher
- Compaq DECforms V2.1B or higher
- VAX FMS V2.3 or higher
- DEC Language-Sensitive Editor V4.4 or higher for character cell terminals. DEC Language-Sensitive Editor/Source Code Analyzer V4.4 or higher for workstations running DECwindows
- Oracle Rdb V6.1 or higher
- VAX TDMS V1.9 or higher
- Oracle Rdb Transparent Gateway for DB2
- Oracle Rdb Transparent Gateway for Oracle7 & 8
- Oracle Rdb Transparent Gateway for SYBASE
- DECnet/OSI for OpenVMS VAX Version 6.3 or higher for Fullname support.
- In order to use the DATATRIEVE Client for Windows with the DATATRIEVE server, the following software is required by the Client:
  * Microsoft Windows Version 3.1 or higher, or Microsoft Windows 95®, or Microsoft Windows NT™.
  * A compiler or interpreter that can access DLL libraries (only required for the Compaq DATATRIEVE Call Interface).

The following software has been tested to support DECnet connections:

* On the Server:
  — DECnet Extensions Version 6.3 for OpenVMS VAX or DECnet Version 6.3 or higher for OpenVMS VAX.
* On the Client:
  — PATHWORKS™ Version 5.0F or higher for Windows V3.1 and V3.11.

The following software has been tested to support TCP/IP connections:

* On the Server:
  — DIGITAL TCP/IP Services for OpenVMS V4.1
  — TGV MultiNet®
* On the Client:
  — PATHWORKS Version 5.0F or higher for Windows V3.1 and V3.11.

— TCP/IP for Windows 95

— TCP/IP for Windows V3.11

— TCP/IP for Windows NT V3.5

— Trumpet V2.1 Rev F

Certain versions of these products depend upon a specific version of the operating system. Please refer to the Software Product Description of the product in question to determine which version is required.

GROWTH CONSIDERATIONS

The minimum hardware/software requirements for any future version of this product may be different from the requirements for the current version.

DISTRIBUTION MEDIA

9-track 1600 BPI Magtape, TK50 Streaming Tape

This product is also available as part of the OpenVMS VAX Consolidated Software Distribution on CD-ROM.

The software documentation for this product is also available as part of the OpenVMS VAX Online Documentation Library on CD-ROM.

ORDERING INFORMATION

Unlimited Use

Software Licenses: QL-898A*-**

Software Media: QA-898A*-**

Software Documentation: QA-898AA-GZ

Windows Client Documentation: QA-2W6AA-GZ

Software Product Services: QT-898A*-**

Concurrent Use

Software License: QL-898A*-3*

Personal Use

Software License: QL-898A*-2*

* Denotes variant fields. For additional information on available licenses, services, and media, refer to the appropriate price book.

The above information is valid at time of release. Please contact your local Compaq office for the most up-to-date information.

SOFTWARE LICENSING

This software is furnished under the licensing provisions of Compaq Computer Corporation's Standard Terms and Conditions. For more information about Compaq's licensing terms and policies, contact your local Compaq office.

Effective with the release of Version 7.2 onwards, the rights to use the DATATRIEVE Client module are granted under the server license. This module is now bundled with the server binaries. You no longer have to purchase the DATATRIEVE Client separately.

License Management Facility Support:

This layered product supports the OpenVMS License Management Facility.

License units for this product are allocated on an Unlimited System Use plus Personal Use and Concurrent Use basis.

This layered product offers a Personal Use license. Each Personal Use license allows one identified individual to use the layered product.

This layered product offers a Concurrent Use license. Each Concurrent Use license allows any one individual at a time to use the layered product.

For more information on the License Management Facility, refer to the OpenVMS VAX Operating System Software Product Description (SPD 25.01.xx) or the OpenVMS VAX Operating System documentation.

For more information about Compaq's licensing terms and policies, contact your local Compaq office.

SOFTWARE PRODUCT SERVICES

A variety of service options are available from Compaq. For more information, contact your local Compaq office.

SOFTWARE WARRANTY

Warranty for this software product is provided by Compaq with the purchase of a license for the product as defined in the *SOFTWARE LICENSING* section of this SPD.

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™ Windows NT is a trademark of Microsoft Corporation.

™ Compaq, CDA, DATATRIEVE, DEC, Compaq BASIC, Compaq Fortran, Compaq DECforms, DECnet, DECwindows, DIGITAL, FMS, MicroVAX, MicroVAX I, MicroVAX II, OpenVMS, PATHWORKS, PDP, ReGIS, VAX, VAX 6000, VAX Pascal, VAX Rdb/ELN, VAXft, VAXstation, VMS RMS, and the Compaq logo are trademarks of Compaq Computer Corporation.